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THE FORESTS OF ALABAMA, AND THEIR PRODUCTS,

BY

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The fifty thousand square miles which make up the area of this State were, originally, a nearly unbroken forest—it may be said up to the end of the first quarter of this century; with the exception of a comparatively small area of prairie land, and grassy savannas in the southern portion of its centre. According to the latest statistics†, seven-tenths of this forest are still existing, amounting to 20,630,963 acres; some of it culled of its largest timber growth, but the greater part in its virgin state, scarcely touched by the axe. One-half of the lands owned by the farmers are yet wood lands. The heaviest timbered lands are found in the southern part of the State within the great maritime pine belt, where the forest area amounts to 66 per cent.; in the central counties, situated in the prairie region and embracing the cotton belt, it amounts to 45 per cent.; in the broken mountainous part, embracing the mineral region and extending to the waters of the Tennessee river, to nearly 70 per cent.; and in the northern part, with the rich agricultural land in the Tennessee valley, to 60 per cent.

According to the distribution of the prevailing trees, determined by climatic influences, the nature of the soil, and the topographic features of the country, the forests of this State present three characteristic regions. Distinct as they are by peculiar features, their boundaries cannot be defined by a distinct line—one region passing almost imperceptibly into the other.

The first, or lower, region is formed by the great pine belt of the Gulf coast—the continuation of the immense pine forest which extends from the eastern bank of the Mississippi to the shores of the Atlantic ocean. It covers the southern part, uninterruptedly, from east to west, and extends from one hundred to

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one hundred and fifty miles into the interior. This area is almost exclusively occupied by coniferous trees—the undulating dry and sandy uplands entirely by the long leaved, or yellow pine, the most important while most valuable of our timber trees, which arrives here at its greatest perfection. On the lands more level and with a substratum more retentive of moisture, it is accompanied by the pond pine, and the loblolly, or old field pine. Following the sandy and gravelly deposits of the drift, the limits of that formation determine the northern boundary of the pine region, proper. A growth of pine trees, however, prevails wherever the siliceous constituents of the drift soil mingle with the outcrops of the tertiary strata. This is the great timber region of the State. Traversed centrally and towards the east by the numerous tributaries of the Escambia river, a large share of its products finds an outlet in Pensacola; westwardly the Alabama and Tombigbee rivers with their affluents, offer an access to the sea by the port of Mobile; while a small portion along the western boundary line of the State by the eastern tributaries of the Esquatawba river is attracted to the mills and wharves along the Pascagoula river. The products of this forest of yellow pine assume, with every year, a greater importance to the business of the Gulf ports; and their exports from the seaport of this State, entering only since the beginning of this decade in competition with its neighbors, show a steady and rapid increase in the production and export of sawed lumber, square timber, spars, shingles, and particularly in the receipt of naval stores. A proper idea of the great wealth offered by this lumber region of our State, almost exclusively derived from one single species of Pine, will be gained from the following statements taken from the reports of The Mobile Board of Trade, exhibiting the receipts and exports of lumber and naval stores from that port since the year 1872 to the present time: the exports of sawed lumber amounting in 1872, to 4,000,000 feet, increased to 7,000,000 in the following year, to 12,000,000 in 1876, to 18,000,000 in 1877, and it can be safely assumed that in this year (1878) the export will not fall short of 20,000,000 feet, representing a value of at least \$200,000.

The production of naval stores exhibits an equally rapid increase. The rosin and spirits of turpentine reaching the Mobile market from the adjacent country, in 1873, amounted to \$750,000, showing already, at that period, an increase of 50 per cent. over the production of any former year; increasing to over \$1,000,000 in 1874; and in the year 1876, the receipts were much greater, their value amounting to \$1,200,000, involving a vastly

increased production by the much reduced prices of these articles ruling during the last two years. In these sums, the quantities required for home consumption are not included. If those, and the quantities of sawed lumber and squared timber derived from the pine belt within the confines of our State, and which are exported from Pensacola, so far the chief centre of the lumber business on this coast, are considered, the amounts given above will certainly be doubled. Lastly, with the exhaustion of the yellow pine forest that encircled Pensacola bay, and of those in convenient reach upon the coast of continental Florida, a very large quota of the saw logs are drawn from Alabama by the tributaries and head waters of the Escambia and the Perdido river.

The average height of the yellow pine in the virgin forest is from sixty to seventy feet, with a diameter of 12 to 18 inches for two-thirds of its height. It is of slow growth, particularly at the later periods of its life. According to the number of annual rings, trees of the above dimensions must have reached an age of 60 to 70 years. The reproduction of a tree from the seed, furnishing an equal supply of timber, would at this rate take about two generations. It is a poor seeder, as the younger Michaux observed. In unfruitful years, a forest of hundreds of miles may be ransacked without finding a single cone, and these, according to my observations, are far more frequent than fruitful ones. In its struggle for existence in our days, the odds of a survival of its kind amongst the arborescent vegetation that disputes its ground are greatly against it. Taken from the flat and moist lands, and it is replaced almost exclusively by the pond and old field pine; the hilly, broken, dry upland, denuded of the grand old pine forest, is with surprising rapidity covered by a dense and scrubby growth of blackjack, turkey oak, scarlet and upland willow oak, above which, seldom a young yellow pine raises its head, crowned with its large white-fringed terminal bud. Full of resinous juices, through all stages of its life, the young trees are not as able to withstand the raging fires that annually devastate the woods, as the less resinous species, and the deciduous leafed trees; besides that being of much slower growth, this noble tree is doomed to extinction, if not protected by the aid of man. On tracts sheltered from the invasion of fire, groves of young trees, from 15 to 20 feet high, can be observed around Mobile, testifying that its existence for the future can in some measure be secured, if protected from these destructive influences, unnecessarily caused by man. The utmost efforts by an enlightened community, should be made through active and efficient State

legislation, without further delay, to guard against the calamity of a total destruction of such a magnificent estate entrusted to the hands of our people. Besides its contributions to the manifold necessities of the agriculturist, the builder, in naval architecture, the construction of railroads, the arts, medicine, and the innumerable smaller demands of domestic economy and the varied industries of the world, the influences of this great pine belt upon the climatic conditions and the salubrity of this coast are even of more far reaching importance to the interest of the community at large, extending far outside of its confines. Rearing its horizontally outspreading limbs high up into the atmospheric ocean, their branches densely clothed with the long, slender leaves, the forest of these trees present to the canopy of heaven, for many hundred of square miles, an unbroken sheet of perpetually active vegetation, whose forces at such an altitude affect a constant attraction to the fleeting clouds, causing them to deposit their life-giving and supporting humidity, in grateful showers over a very large area with wonderful regularity during all seasons. To this fact is due the delightful climate of this part of our country, equalizing its temperature particularly in tempering the rigors of the long summers of a region near the tropics. During the great progress in meteorological science of late years, the fact has been established that in their exercise upon the conditions of the atmosphere as regards the precipitation of its moisture, the pine trees stand unrivalled amongst all other trees of the forest. Robbed of this protection, the hills and plains of the Gulf region, now blooming and clothed with the richest verdure, would be arid and parched, presenting as forbidding and austere an aspect as those of the denuded coasts of Africa along the Mediterranean sea, devoid of productive power, and unfit for the habitation of civilized man, smarting under the scorching rays of the sun. The efforts of nature are ever directed to recuperation in its aims to insure the existence of different forms of the living organisms from generation to generation. To secure to our posterity the blessings enjoyed by us by its bounty, in assisting these efforts as dictated by her laws, is a stern duty imposed upon us. Its discharge in the prevention of a wanton destruction of our forests, and the adoption of measures regulated by the light of science, common sense, and the proper regard to the future of our State, should engage the attention of every intelligent and patriotic citizen, appealing particularly to the owners of the soil. Of little importance to agriculture and industry, are the other species of pines found in this region. Of considerably

smaller dimensions than the yellow pine, and of a soft and sappy wood, they have, as timber trees, but a small value. On account of their rapid growth, they are, however, important resources of fire wood, and of a lumber of inferior quality, fit for ordinary purposes, as the manufacture of boxes, etc.

Next to the yellow pine in importance, follows the Cypress—*Taxodium distichum*. It grows in great abundance on the perpetually overflowed banks of, and in the marshes skirting, the rivers in the tide water region, as well as the deep inundated swamps in the pine region from which issue the feeders of the innumerable creeks that water the pine belt. Here, it reaches gigantic dimensions—trunks from a hundred and more feet in height, and from twenty-five to forty feet in circumference above the conical base, are frequently met with in the forest swamps of the Tensaw river. Logs, of three to four feet in diameter, are often floated down to the shingle yards and saw mills of Mobile. Its lumber finds a variety of application. It is mostly sawed into planks for exportation, lately in increasing quantities; much of it is used in the manufacture of doors, window-sashes, and other cabinet work, and in that of shingles. For posts, it is scarcely rivaled, resisting the action of water for ages.

The Juniper,—*Cupressus thyoides*, is gaining, of late years, with the manufacture of woodenware, the attention which by the excellent qualities of its wood, it deserves. This fine tree is found in great perfection on the low land skirting our great rivers, and in the large forest swamps of the low pine barrens, preferring a partially inundated soil. Soft, light, easily worked, of a fine grain admitting of high finish and pleasing hue, when well seasoned its wood offers the finest material, particularly for the manufacture of hollowware. This industry, lately established in Mobile, is capable of great development, as by the inexhaustible supply of timber within easy reach, such goods can be made cheaper here than in any other part of the United States.

The Live Oak—*Quercus virens*, has ceased to be a source of timber here. The excellent qualities of its wood, particularly fitting it for ship building, has, like everywhere else on the Gulf coast, led to a rapid destruction of the stately groves that extended along our seashore. It is only by the effort of the owners of the land who have a love for that which is grand and lovely in nature, that these beautiful and noble trees will be preserved, and not cease to form one of the most pleasing features in the landscape of our coast.

The black jack, turkey oak, spanish oak, upland willow oak,

and a more or less scrubby growth of black and red oaks, with a sprinkling of hickory, form the second growth on the denuded dry pine land. These furnish the supply of hard fire-wood. The growth of these trees on the poor looking lands is indeed surprising, forming, after fifteen or twenty years, when protected from fire, fine large groves. The water ash, growing with the sweet bay and juniper, in the low, inundated swamps, must be mentioned as one of the trees furnishing much of the fire wood. The light, yet tenaceous, wood of the sweet bay, is much used for broom handles. The grand and sober monotony that characterizes the pine forest, finds a pleasant relief in the thickets and glades of evergreen shrubs and various smaller trees which fringe the water courses and swamps. The red bay, sweet bay, small gum tree, wax myrtle, with a dense growth of the *ti-ti*, interspersed by dahoons, hollys, and red maple, intertwined by a variety of climbers and vines, thorny, like those belonging to the different kinds of smilax, adorned with flowers, as the yellow jessamine, the graceful wistaria, and peculiar crossvine, form impregnable thickets, the home of the wild cat, the panther, and the bear. The lands above high water, in the maritime plains of the pine region, with a soil richer in vegetable mould, are the home of the lofty magnolias, the live oak, water oak, associated with the pond pine. These are called hammock lands. They harbor an undergrowth of shrubbery unsurpassed in variety and beauty. There the sweet illicium, and the calycanthus, or spice shrub, are found, with rich blooming andromedas, blueberries, azalias, and the gorgeously blooming kalmia, or sheeps-laurel. There the fragrant storax shrubs, the delicate halesia and fringe tree, with the cyrilla, stuartia and clethra, unfold their snowy flowers, with many others, delighting the eye, by the richness of their bloom, from the earliest beginning of the spring to the end of the summer, offering a lasting feast to the bee, which for the largest part of the year is here found to gather the sweet treasures, distilled in the flowery cups. As a honey producing country, this district can be scarcely rivaled.

Where the limestones and the marls of the tertiary and cretaceous formation begin to prevail, free from the cover of sandy drift soil, the second forest region of the State is entered. Here the evergreens give way to the largely preponderating trees with deciduous leaves, and the pine is confined to the poor ridges and thinnest soils. The forest growth is originally interrupted by more or less extensive savannas. The post oak covers, in extensive tracts, the stiffer calcareous soils. White oaks, the overcup

oak, and the willow oak, with ash trees, elms, walnuts and hickories, cover the richer black lands, composing fine woods, full of useful timber of large dimensions. As a timber region for export, it has yet no importance, only a limited quantity of oak staves reach the seaboard by the Mobile and Tombigbee rivers. The richest agricultural districts of the State are embraced in these regions. At its northern limits it borders upon a deposit of drift, which traverses the State from northwest to southeast, 4 to 5 miles wide at its southern, reaching gradually towards its northern end a width of 30 to 35 miles. Like the great coast pine belt, it is covered with an almost continuous forest of the yellow pine, whose products so far serve only to supply the demand of the surrounding country.

Beyond this drift belt, in the eastern half of the State, the generous red lands of the metamorphic region are covered, where not deprived of it by cultivation, with magnificent oak forests. Here, at an altitude of from 800 to 1,200 feet above the level of the Gulf, the types of a Southern vegetation are missing, but the occurrence of the water and willow oak, the overcup and spanish oak, as well as the frequency of large yellow pines, which cover the crests of the elevated rocky mountain ranges, and the more barren hills with a rocky, siliceous soil, still impress on this region, a Southern character. The latter tree is replaced, gradually, towards the north, by the short leaved pine, *Pinus mitis*, which furnishes, in the upper district, a great part of the lumber of excellent quality. The more sterile and broken mountainous country, east and west, embracing the mineral lands of the State, is covered with dense forests of black and red oaks, the smooth hickory, sparsely intermixed with scrub pines. In the more elevated ranges, the mountain chestnut oaks, and the chestnut tree, prevail, the latter rapidly dying out. The numerous fertile valleys are harboring fine woods, composed of trees delighting in a richer soil.

The third and most northern sylvan region of the State begins with the limestone formation of the Tennessee valley. Species of the woody vegetation, characteristic of the lower latitudes, are no more seen, or when met with, as dwarfed stragglers. The maples, the tall hickories, the stately elms, walnuts, wild cherry, hackberries, nettle trees, with shady groves of beach, make up the forest growth, bearing the same character as the forest flora of the western declivity of the Appalachian Mountains, south of the Ohio river. The Southern magnolias are represented here by the umbrella tree, the cucumber tree, and the mighty white poplar, or tulip tree.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.*
No. 1.	Magnoliaceæ.	Illium Floridanum, Ellist Sweet Illium.	Evergreen Shrub.	Coast,	Mobile.
No. 2.	"	Magnolia grandiflora, L.	Evergreen large tree.	Coast to central.	Mobile.
No. 3.	"	Magnolia glauca, L.	Sweet Bay	Coast.	Mobile.
No. 4.	"	Magnolia macrophylla, Mx.	L'ge leaved Magnolia.	Deciduous, small tree.	Lower to central.
No. 5.	"	Magnolia Fraseri, Walt.	So'th'in Cucu'ber tree.	Large tree, deciduous.	Lower to central.
No. 6.	"	Magnolia acuminata, L.	Cucumber tree.	Large tree, deciduous.	Lower to upper.
No. 7.	"	Magnolia Umbrella, Lam.	Umbrella tree.	Medium tree, decid's.	Tallapoosa.
No. 8.	"	Magnolia cordata, Mx.	Yellow flowered Mag.	Small tree, deciduous.	North Alabama.
No. 9.	"	Liriodendron tulipifera, L.	Tulip tree.	Poplar.	North Alabama.
No. 10.	Anonaceæ.	Asimina triloba, Dun.	Small tree or shrub.	Lower to north.	Clarke.
No. 11.	"	Asimina parviflora, Dun.	Small shrub.	Coast.	North Alabama.
No. 12.	Camelliaceæ.	Gordonia lasianthus, L.	Ev'gr'n tree or shr'b.	Coast.	Mobile.
No. 13.	"	Stuartia Virginica, Cav.	Shrub.	Coast to north.	Clarke.
No. 14.	Tiliaceæ.	Tilia Americana, L.	Linden tree.	Lower to north.	Clarke.
No. 15.	Rutaceæ.	Zanth'xyl'nCar'lin'm, Lam.	Southern Frickly Ash.	Coast to central.	Mobile.
No. 16.	"	Ptelea trifoliata, L.	Hope tree or trifol.	Shrub, mts.	Clarke.
No. 17.	Meliaceæ.	Melia Azederach, L.	Chinaberry tree.	L'ge tree, intr'duc'd.	Lower.
No. 18.	Anacardiaceæ.	Rhus typhina, L.	Common Shumac.	Shrub.	Central to north.
No. 19.	"	Rhus glabra, L.	"	Shrub.	Tallapoosa.
No. 20.	"	Rhus copallina, L.	"	Shrub.	North Alabama.
No. 21.	"	Rhus venenata, DC.	"	Shrub.	Mobile.
No. 22.	"	Rhus Toxicodendron, L, in varieties.	Poison elder.	Shrub.	Coast to north.
No. 23.	"	Rhus aromatica, Ait.	Poison Ivy and Oak.	Everywhere.	Mobile.
No. 24.	Vitaceæ.	Vitis (cissus) incisa, Nutt.	Evergreen shrub.	Central to north.	Tallapoosa.
No. 25.	"	Vitis (cissus) bipinnata, T. & G.	Deciduous shrub.	Coast.	Mobile.
No. 26.	"	Vitis æstivalis, L.	Summer grape.	Coast to central.	Mobile.
No. 27.	"	Vitis vulpina, L.	Bull grape, Muscadine	Coast to north.	Mobile.
No. 28.	"	Vitis Labrusca, L.	Fox grape.	Coast to upper.	Mobile.
No. 29.	"	Ampelopsis Virginica, Mx.	Virginian creeper.	Coast to north.	Mobile.
No. 30.	Rhamnaceæ.	Berchemia volubilis, DC.	Creeping shrub.	Coast.	Mobile.

* This Heading is intended to designate the Counties in which the specimens were collected by the writer.

† The names, initials, and abbreviations of names, immediately to the right of the Botanical names, indicate the authors of the plant names.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 31.	Rhamnaceæ	Sageretia Michauxii, Bron.	Evergreen shrub.	Coast.	Mobile.
No. 32.	"	Rhamnus lanceolatus, Pursh	Deciduous shrub.	Central.	Wilcox.
No. 33.	"	Rhamnus parviflorus, Buck	Deciduous shrub.	Central.	Wilcox.
No. 34.	"	Frangula Caroliniana, Gray	Small tree.	Coast.	Mobile.
No. 35.	Celastraceæ	Euonymus Americanus, L.	Small shrub.	Coast to northw'd	Mobile.
No. 36.	"	Euonymus atropurpureus, Jacq	Spindel tree.	Central to north.	Tallapoosa.
No. 37.	Staphyleaceæ	Staphylea trifolia, L.	Bladder nut.	Small shrub.	North Alabama.
No. 38.	Sapindaceæ	Aesculus Pavia, L.	Red buckeye.	Shrub.	Mobile.
No. 39.	"	Aesculus parviflora, Walt.	Shrub.	Central to upper.	Wilcox.
No. 40.	"	Aesculus flava, Ait.	Yellow buckeye.	Small tree or shrub.	Central to upper.
No. 41.	Aceraceæ	Acer saccharinum, var. nigrum.	Black sugar maple.	Large tree.	Lower to north.
No. 42.	"	Acer dasycarpum, Ehr.	Silver Maple.	Large tree.	North.
No. 43.	"	Acer rubrum, L.	Red maple.	Small tree.	Coast to north.
No. 44.	"	Negundo aceroides, Meh.	Ash leaved maple.	Small tree.	North.
No. 45.	Leguminosæ.	Amorpha fruticosa, L.	Shrub.	Coast to northw'd	Mobile.
No. 46.	"	Robinia Pseudacacia, L.	Locust.	Tree.	Coast.
No. 47.	"	Robinia viscosa, Vent.	Fed flowering Locust.	Mountain.	Com'n ev'rywh'e.
No. 48.	"	Wistaria frutescens, DC.	Climber	Coast to westw'd.	Mobile.
No. 49.	"	Erythrina herbacea, L.	Small shrub.	Coast.	Mobile.
No. 50.	"	Gleditsia triacanthos, L.	Honey Locust.	Tree.	Common.
No. 51.	"	Gleditsia monosperma, Walt.	Small tree.	North.	Mobile.
No. 52.	"	Cercis Canadensis, L.	Redbud.	Small tree.	Lower to north.
No. 53.	Rosaceæ	Chrysobalanus oblongifolius, Mx.	Deer plum.	Small shrub.	Coast.
No. 54.	"	Prunus Americana, Mar.	Large or red plum.	Small tree.	Central to north.
No. 55.	"	Prunus umbellata, Ell.	Southern Bullace plum	Coast.	Tallapoosa.
No. 56.	"	Prunus Chickasa, Mx.	Chickasa plum.	Coast.	Mobile.
No. 57.	"	Prunus serotina, Ehrh.	Wild cherry.	Large tree.	Lower to north.
No. 58.	"				Mobile.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 59. Rosaceæ.	<i>Prunus Caroliniana</i> , Ait.	Mock orange.	Small tree.	Coast.	Mobile.
No. 60. "	<i>Spirea opulifolia</i> , L.	Rine bark.	Small shrub.	Central.	Tallapoosa.
No. 61. "	<i>Neviusia Alabamensis</i> , Gray		Small shrub.	Central.	Tuscaloosa.
No. 62. "	<i>Rubus trivialis</i> , Mx.	Southern Dewberry.		Coast to north.	Mobile.
No. 63. "	<i>Rubus villosus</i> , Ait.	Blackberry.		Com'n ev' ywh're Mobile.	
No. 64. "	<i>Rosa levigata</i> , Mx.	Cherokee rose.		Coast.	Mobile.
No. 65. "	<i>Rosa lucida</i> , Ehr.	Dwarf wild rose.		Upper districts.	
No. 66. "	<i>Rosa Carolina</i> , L.	Swamp rose.		Central to north.	
No. 67. "	<i>Cratægus apifolia</i> , Mx.		Small shrub.	Central to upper.	Montgomery.
No. 68. "	<i>Cratægus parvifolia</i> , Ait.		Small shrub.	Coast.	Mobile.
No. 69. "	<i>Cratægus spathulata</i> , Mx.		Small shrub.	Central.	Tallapoosa.
No. 70. "	<i>Cratægus tomentosa</i> , L. var. mollis Gr.				
No. 71. "	<i>Cratægus flava</i> , Ait.	Summer Haw.	Small shrub.	Lower to north.	Clarke.
No. 72. "	<i>Cratægus æstivalis</i> , T & Gr.	Apple Haw.	Small shrub.	Lower to central.	Mobile.
No. 73. "	<i>Cratægus arborescens</i> , Ell.	Haw.	Shrub.	Lower to upper.	Mobile.
No. 74. "	<i>Pyrus arbutifolia</i> , L. var. erythrocarpa.				
No. 75. "	<i>Pyrus arbutifolia</i> , var. melanocarpa.	Chokeberry.	Small shrub.	Coast to north.	Mobile.
No. 76. "	<i>Amelanchier Canadensis</i> , var. <i>Botryapium</i> .				
No. 77. Calycanthaceæ.	<i>Calycanthus floridus</i> , L.	Spice bush.	Sm. tree, service berry.	Com'on ev' ywh'e Mobile.	
No. 78. "	<i>Calycanthus floridus</i> , L.		Shrub.	Central.	Tallapoosa.
No. 79. Saxifragaceæ.	<i>Itea Virginica</i> , L.		Shrub.	Lower.	Mobile.
No. 80. "	<i>Hydrangea arborescens</i> , L.		Shrub.	Coast.	Mobile.
No. 81. "	<i>Hydrangea radiata</i> , Walt.		Shrub.	Central to north.	Tallapoosa.
No. 82. "	<i>Hydrangea quercifolia</i> , Bart.		Shrub.	Lower to central.	Clarke.
No. 83. "	<i>Philadelphus inodorus</i> , L.	Syringe.	Shrub.	Central.	Tallapoosa.
No. 84. "	<i>Decumaria barbara</i> , L.		Climbing shrub.	Central to upper.	Wilcox.
No. 85. Hamamelidaceæ.	<i>Hamamelis Virginica</i> , L.	Witch hazel.	Large shrub.	Coast.	Mobile.
No. 86. "	<i>Liquidambar styraciflua</i> , L.	Sweet gum.	Tree.	Com'on ev' ywh'e Mobile.	

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 87.	Araliaceæ.....	Aralia spinosa, L.....	Shrub to small tree.....	Com'n ev' ywh're Mobile.	
No. 88.	Cornaceæ.....	Cornus florida, L.....	Dogwood.....	" " Mobile.	
No. 89.	"	Cornus sericea, L.....	Silky Dogwood.....	Lower to north.....	Clarke.
No. 90.	"	Cornus stricta, Lam.....	"	Central.....	Tallapoosa.
No. 91.	"	Cornus asperifolia, Mx.....	"	Central.....	Tallapoosa.
No. 92.	"	Nyssa multiflora, Wang.....	Black gum.....	Large tree.....	Com'n ev' ywh'e Mobile.
No. 93.	"	Nyssa aquatica, L.....	Black gum.....	Large tree.....	Com'n ev' ywh'e Mobile.
No. 94.	"	Nyssa uniflora, Walt.....	Swamp Tupelo.....	Small tree.....	Lower to upper.....
No. 95.	Caprifoliaceæ	Symphoricarpos vulgaris, Mx.	"	Small shrub.....	Baldwin.
No. 96.	"	Sambucus Canadensis, L...	"	Shrub or small tree.....	North Alabama.
No. 97.	"	Lonicera sempervirens, Ait.	Trumpet Honeysuckle.	Coast.....	Com'n ev' ywh'e Mobile.
No. 98.	"	Viburnum nudum, L.....	White Rode.....	Shrub or small tree.....	Coast to northw'd Mobile.
No. 99.	"	Viburnum prunifolium, L.	Blackhaw.....	Shrub or small tree.....	Lower to north.....
No. 100.	"	Viburnum Lentago, L.....	"	Shrub or small tree.....	Clarke.
No. 101.	"	Viburnum acerifolium, L.....	"	Upper.....	Tallapoosa.
No. 102.	"	Viburnum dentatum, L.....	Arrow wood.....	Upper.....	Tallapoosa.
No. 103.	Rubiaceæ.....	Cephalanthus oc'id'ntalis, L	Button bush.....	Com'n ev' ywh'e Mobile.	
No. 104.	Eriaceæ.....	Gaylussacia dumosa, T & Gr	Dwarf Huckleberry....	Coast.....	Mobile.
No. 105.	"	Gaylussacia frondosa, T & Gr	High Huckleberry.....	Coast.....	Mobile.
No. 106.	"	Vaccinium arboreum, Mar..	Farkleberry.....	Small tree, evergreen.....	Coast to upper.....
No. 107.	"	Vaccinium myrsinites, Mich	"	Small shrub, ev'gr'n.....	Mobile.
No. 108.	"	Vaccinium tenellum, Ait...	"	Small shrub.....	Coast.....
No. 109.	"	Vaccinium corymbosum, L.	Swamp Blueberry.....	Coast to north.....	Mobile.
No. 110.	"	Oxydendrum arboreum, DC.	"	Small shrub.....	Coast.....
No. 111.	"	Andromeda nuda, Bart.....	"	Small shrub.....	Coast to north.....
No. 112.	"	Andromeda ligustrina, Muhl	"	Small shrub.....	Coast.....
No. 113.	"	Leucothoe axillaris, Don..	"	Small shrub.....	Coast.....
No. 114.	"	Leucothoe racemosa, Gr....	"	Small tree.....	Coast to north.....
No. 115.	"	Clethra alnifolia, L.....	White Alder.....	Shrub.....	Coast to north.....
No. 116.	"	Kalmia latifolia, L.....	Calico shrub.....	Shrub.....	Coast to north.....
No. 117.	"	Kalmia hirsuta, Walt.....	Wicky.....	Small shrub.....	Coast.....
No. 118.	"	Azalea viscosa, L.....	White honeysuckle.....	Shrub.....	Coast to north.....

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 119.	Ericaceæ.....	Azalea nudiflora.....	Pink Azalea.....	Coast to north.....	Mobile.
No. 120.	Aquifoliaceæ.....	Ilex opaca, Ait.....	Holly.....	Evergreen small tree.....	Lower to upper..... Mobile.
No. 121.	"	Ilex Cassine, L.....	Yupon.....	Shrub, evergreen.....	Coast..... Mobile.
No. 122.	"	Ilex Dahoon, Walt.....	Evergreen tree.....	Coast.....	Coast..... Mobile.
No. 123.	"	Ilex decidua, Walt.....	Shrub.....	Coast.....	Coast..... Mobile.
No. 124.	"	Ilex Amelanchier, Curt.....	Shrub.....	Mountains.....	Talladega.
No. 125.	"	Ilex glabra, Gray.....	Inkberries.....	Shrub.....	Coast..... Mobile.
No. 126.	"	Ilex coriacea, Chap.....	Large shrub.....	Coast.....	Coast..... Mobile.
No. 127.	"	Ilex verticillata, Gr.....	Black Alder.....	Small shrub.....	Coast..... Mobile.
No. 128.	Styracaceæ.....	Styrax pulverulenta, Mx.....	Small shrub.....	Lower to north.....	North Alabama.
No. 129.	"	Styrax grandifolia, Ait.....	Small shrub.....	Lower to north.....	Mobile.
No. 130.	"	Styrax Americana, Lam.....	Small shrub.....	Mountains.....	Talladega.
No. 131.	"	Halesia diptera, L.....	Snowdrop tree.....	Small tree.....	Lower..... Mobile.
No. 132.	"	Halesia tetraptera, L.....	Silverbell tree.....	Small tree.....	Central to upper..... Tallapoosa.
No. 133.	"	Symplocos tinctoria, L.....	Sweet leaf.....	Small tree.....	Coast..... Mobile.
No. 134.	Cyrillaceæ.....	Cyrilla racemiflora, Walt.....	Small tree.....	Coast.....	Coast..... Mobile.
No. 135.	"	Cliftonia ligustrina, Banks, Titi.....	Tree.....	Coast.....	Coast..... Mobile.
No. 136.	Ebenaceæ.....	Diospyros Virginiana, L.....	Tree.....	Common.....	Mobile.
No. 137.	Sapotaceæ.....	Bumelia lcyoides, Gert.....	Small tree.....	Coast to north.....	Mobile.
No. 138.	"	Bumelia lanuginosa, Pers.....	Small tree.....	Coast.....	Coast..... Mobile.
No. 139.	Bignoniaceæ.....	Catalpa bignonioides, Walt.....	Catalpa.....	Large tree.....	Upper districts.....
No. 140.	"	Tecoma radicans, Juss.....	Trumpet vine.....	Climber.....	Common..... Mobile.
No. 141.	"	Bignonia capreolata, L.....	Crossvine.....	Climber.....	Common..... Mobile.
No. 142.	Verbenaceæ.....	Callicarpa Americana, L.....	French mulberry.....	Shrub.....	Common..... Mobile.
No. 143.	Oleaceæ.....	Olea Americana, L.....	Devil wood.....	Small tree.....	Coast..... Mobile.
No. 144.	"	Chionanthus Virginica, L.....	Fringe tree.....	Small tree.....	Lower to north..... Mobile.
No. 145.	"	Fraxinus platycarpa, Mx.....	White Ash.....	Small tree.....	Lower to north..... Mobile.
No. 146.	"	Fraxinus Americana, L.....	White Oak.....	Small tree.....	Lower to north..... Mobile.
No. 147.	"	Fraxinus quadrangulata.....	Blue Ash.....	Large tree.....	Lower to north..... Clarke.
No. 148.	"	Fraxinus pubescens, Lam.....	Red Ash.....	Large tree.....	Lower to north..... North Alabama.
No. 149.	Polygonaceæ.....	Brunnichia cirrhosa.....	Banks.....	Climber.....	Lower to central..... Mobile.
No. 150.	Lauraceæ.....	Persea Carolinensis, Nees.....	Red bay.....	Evergreen tree.....	Lower to north..... Mobile.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER:	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 151.	Lauraceæ.....	Sassafras officinale, Nees.....	Sassafras.....	Common.....	Clarke, North Alabama.
No. 152.	"	Lindera Benzoin, Meis.....	Northern Spicewood.....	Upper district.....	
No. 153.	"	Tetr'nthera geniculata, Nees.....	Pond spice.....	Lower to north.....	Clarke, Mobile.
No. 154.	Thymeleaceæ.....	Dirca palustris, L.....	Leatherwood.....	Shrub.....	
No. 155.	Empetraceæ.....	Ceratiola ericoides, Mx.....	Red Elm.....	Evergreen shrub.....	Coast.....
No. 156.	Urticaceæ.....	Ulmus Americana, L.....	Slippery Elm.....	Large tree.....	Central to north.....
No. 157.	"	Ulmus fulva, Mx.....	Wahoo.....	Tree.....	Lower to north.....
No. 158.	"	Ulmus alata, Mx.....	Planer tree.....	Small tree.....	Lower to upper.....
No. 159.	"	Planera aquatica, Gmel.....	Hackberry, Nettle tree.....	Small tree.....	Central to upper.....
No. 160.	"	Celtis occidentalis, L.....	Mulberry.....	Large tree.....	Lower to north.....
No. 161.	"	Celtis Mississipiensis, Bosc.....	Mulberry.....	Small tree.....	Coast.....
No. 162.	"	Morus rubra, L.....	Paper Mulberry.....	Tree.....	Upper districts.....
No. 163.	"	Broussonetia papyrifera, Vent.....	Osage Orange.....	Native of E. Asia.....	Mobile.
No. 164.	"	Maclura aurantiaca, Nutt.....	Sycamore.....	Intr. from Ark.....	Mobile.
No. 165.	Platanaceæ.....	Platanus occidentalis, L.....	Shellbark Hickory.....	Common.....	Mobile, North Alabama.
No. 166.	Juglandaceæ.....	Carya alba, Nutt.....	Mockernut.....	Lower to north.....	Mobile.
No. 167.	"	Carya tomentosa, Nutt.....	Pecan nut.....	Large tree.....	Lower to upper dis.,
No. 168.	"	Carya oliviformis, Nutt.....	Black walnut.....	Large tree.....	Lower to upper.....
No. 169.	"	Juglans nigra, L.....	Butternut.....	Large tree.....	Clarke.
No. 170.	"	Juglans cinerea, L.....	Queucus, Oak.....	Lower to upper.....	Clarke.
No. 171.	Cupulifereæ.....	Quercus, Oak.....	White Oaks.		
No. 172.	"	Quercus alba.....	White Oak.....	Large tree.....	Central to north.....
No. 173.	"	Quercus obtusiloba, Mx.....	Post Oak.....	Small tree.....	Coast to upper.....
No. 174.	"	Quercus lyrata, Walt.....	Overcup Oak.....	Large tree.....	Lower to upper.....
No. 175.	"	Quercus Prinus.....	Swamp Chestnut Oak.....	Large tree.....	Central to upper.....
No. 176.	"	Quercus Prinus, var. monticola, Mx.....	Rock Chestnut Oak.....	Large tree.....	Central to upper.....
No. 177.	"	Quercus prinoides.....	Chincapin Oak.....	Small shrub.....	Upper districts.....

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
		<i>Live Oaks.</i>			
No. 178.	Cupulifereæ..	Quercus virens, L.....	Live Oak.....	Coast.....	Mobile.
No. 179.	"	Quercus virens, var. maritima	Dwarf Live Oak.....	Lower.....	Mobile.
No. 180.	"	Quercus cinerea, Mich.....	Upland Live Oak.....	Lower.....	Mobile.
No. 181.	"	Quercus Phellos, L.....	Willow Oak.....	Lower to central..	Mobile.
No. 182.	"	Quercus Phellos, var. arena- ria.....	Sand Willow Oak.....	Coast.....	Mobile.
No. 183.	"	Quercus aquatica, Cates.....	Water Oak.....	Lower to central..	Mobile.
		<i>Black and Red Oaks.</i>			
No. 184.	"	Quercus nigra, L.....	Black Jack.....	Lower to north..	Mobile.
No. 185.	"	Quercus falcata, Mx.....	Spanish Oak.....	Lower to upper..	Mobile.
No. 186.	"	Quercus coccinea, Wang.....	Scarlet Oak.....	Central to upper..	Randolph.
No. 187.	"	Quercus tinctoria, Bart.....	Bl'ck or yel'w bark oak	Central to north..	Tallapoosa,
No. 188.	"	Quercus rubra, L.....	Red Oak.....	Upper to north..	Tallapoosa,
No. 189.	"	Quercus Catesbæi, Mx.....	Turkey or Barren Oak.	Lower.....	Mobile.
		<i>Myricaceæ.</i>			
No. 190.	"	Corylus Americana, Walt.....	Hazlenut.....	Upper district....	Clay.
No. 191.	"	Ostrya Virginica, Willd.....	Hope Hornbeam.....	Lower to north..	Clarke.
No. 192.	"	Carpinus Americana, Mx.....	Iron wood.....	Coast to north....	Mobile.
No. 193.	"	Fagus ferruginea, Ait.....	Beech.....	Coast to north....	Mobile.
No. 194.	"	Castanea vesca, L.....	Chestnut.....	Mounts. to north..	Cleburne,
No. 195.	"	Castanea pumila, Mx.....	Shrub, or small tree.....	Lower to upper..	Mobile.
No. 196.	"	Myrica cerifera, J.....	Bayberry, Waxmyrtle.	Coast.....	Mobile.
No. 197.	"	Myrica inodora, Bart.....	Smooth Waxmyrtle.....	Coast.....	Mobile.
No. 198.	"	Betula nigra, L.....	Red birch.....	Central to north..	Tallapoosa,
No. 199.	"	Alnus serrulata, Ait.....	Smooth Alder.....	Coast to north....	Mobile.
No. 200.	"	Salix nigra, M.....	Black Willow.....	Coast to north....	Mobile.
No. 201.	"	Populus angulata, Ait.....	Cot'n tree, Water pop'l	Lower to north..	Clarke.
No. 202.	"	Populus monilifera, Ait.....	Cotton tree.....	Lower to north..	
No. 203.	"	Pinus australis.....	L'g le'v'd or yel'w pine	Coast to central..	Mobile.
No. 204.	"	Pinus mitis, Mx.....	Short leaved pine.....	Lower to central..	Tallapoosa,

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 205.	<i>Pinus serotina</i> , Mx.....	Pondpine.....	Large tree.....	Coast.....	Mobile.
No. 206.	Coniferae.....	<i>Pinus Elliottii</i> , Engel.....	Old field pine.....	Coast.....	Mobile.
No. 207.	"	<i>Pinus inops</i> , Ait.....	Scrub pine.....	Coast.....	Mobile.
No. 208.	"	<i>Juniperus Virginiana</i> , L.....	Red cedar.....	Lower to north.....	Mobile.
No. 209.	"	<i>Cupressus thyoides</i> , L.....	Juniper.....	Small tree.....	North Alabama.
No. 210.	"	<i>Taxodium distichum</i> , Rich.....	Cypress.....	Large tree.....	Coast to upper.....
No. 211.	Palmæ.....	<i>Sabal Adansonii</i> , Guer.....	Palmetto.....	Large tree.....	Coast to central.....
No. 212.	"	<i>Sabal serrulata</i> , R. & S.....	Saw Palmetto.....	Small tree.....	Coast.....
No. 213.	Smilacæe.....	<i>Smilax Walteri</i> , Pursh.....	Green Briar.....	Shrub.....	Coast.....
No. 214.	"	<i>Smilax Pseudo-China</i> , L.....	False china root.....	Climber.....	Lower.....
No. 215.	"	<i>Smilax glauca</i> , Walt.....	False Sarsaparilla.....	Climber.....	Lower to north.....
No. 216.	"	<i>Smilax laurifolia</i> , L.....	Smooth Briar.....	Climber.....	Lower to north.....
No. 217.	"	<i>Smilax lanceolata</i> , L.....		Climber.....	Coast.....
No. 218.	"	<i>Smilax tamnoides</i> , L.....		Climber.....	Coast to north.....
No. 219.	"	<i>Smilax pumila</i> , Walt.....		Small shrub.....	Coast.....
No. 220.	Euphrasiæe.....	<i>Stillingia ligustrina</i> , Mx.....		Shrub.....	Coast.....
		<i>Stillingia sebifera</i> , Mx.....		Small tree.....	Lower to central.....
					Native of China.....
No. 221.	Liliacæe.....	<i>Yucca aloifolia</i> , L.....	Spanish Daggers.....	Small tree.....	Coast.....
					Mobile.

THE GRASSES,

AND OTHER

FORAGE PLANTS OF ALABAMA,

INDIGENEOUS, NATURALIZED, AND CULTIVATED.

BY

CHARLES MOHR, MOBILE, ALABAMA.

The great grazing capabilities of the richer lands in the interior of this State, are fully established and appreciated. A less favorable opinion in that respect prevails regarding its Southern portion, where stock raising, and the methodic manufacture of the products of the dairy have been deemed not successful. In the light of the experiences of late years, such ideas are rapidly disappearing, and the attention of the farmer in the lower region is now earnestly directed to this fundamental basis of his enduring prosperity. If we miss here the meadow in the strict sense of the word, which forms such a striking feature in the system of agriculture, carried on in Northern latitudes, the South has in its spontaneous grasses, and in several cultivated species from the warmer regions of the Old World, resources of the same kind, in no respect inferior. Considering that many of these plants arrive at their maturity at a much earlier part of the season, making room for successive crops, that others continue to vegetate for several months longer, under the influences of a prolonged warm season, permitting of repeated cuttings, while some grow during a great part of the winter months, the production of fat and flesh producing materials, in the shape of green forage, hay, and in the pasture, must, by equal care and attention, reach here, larger proportions than in higher latitudes, where, for nearly one half the year, this work, in the great laboratory of nature, in consequence of earlier and later frosts, is stopped.

All doubts about these capabilities, even of the sub-tropical belt, and the lighter sandy soils throughout the pine region, will be dispelled by the sight of the rich verdure of a Bermuda grass pasture, or the waving fields of crab grass covering the ground after the removal of the corn, or earlier root crops, producing

with but little extra expense for moderate fertilizing, rich feeding grounds, and tons of sweet odorous hay of the highest quality. If many of the most valuable gregarious meadow grasses of the North do not thrive with us under the influences of longer summers, and perhaps a drier atmosphere, our farmers find in the culture of the larger but not less palatable and nutritious grasses introduced from the warmer zones, ample substitutes. The experiments made in these respects have lead to highly encouraging results, of which the intelligent husbandman, with every year, is more availing himself. Of these, having come only of late years into use, I will mention the following:

Panicum jumentorum, Guinea grass, a native of Africa, most extensively cultivated throughout the tropics. It is planted with us in the beginning of April; admits the first cutting during the last week of May; it makes very large bunches, and is to be cut before extending to the height of about 18 inches. In that stage it is very sweet, tender, and easily cured as hay. In moderately fertilized land and favorable seasons, it can be cut every 5 or 6 weeks, yielding by its throwing out numerous stolons, (stools) increased crops, until killed down by frost. The roots are easily protected during the winter, by a good covering with ground, like the ratoons of sugar cane, and allowing of a manifold division afford the best means of propagation. These root cuttings are set out in March or the beginning of April. Similar in habit, and affording crops of the same nature, is the

Sorghum halleppense, improperly also called Guinea grass. It is a perennial, and where it has taken hold with its large, fleshy, creeping root stocks, is hard to get rid of. Extensive trials with this grass have been made in this State, where it is called Johnson grass, and it has proven to yield crops of great abundance, as it can be mowed about a half dozen times during the season.

Pennicilaria spicata, the cat tail millet, also of African derivation, has been successfully cultivated throughout this State. It yields large crops when well manured, and affords as many cuttings, of a rich forage, but its curing is much more difficult, consequently, as a hay crop, it will be dismissed for the Guinea grass.

Setaria Italica, the millet or Bengal grass, with large nodding compound spikes, and *Setaria Germanica*, a smaller form of it, cultivated as Hungarian grass, with smaller, slender, mostly purple spikes, frequently cultivated and easily cured; yielding early in the season heavy crops of good hay.

The number of native grasses in the State is large, embracing

certainly half of the number of species indigenous to the Eastern United States. I have observed and collected in Southern and Central Alabama 132 species, belonging to 53 genera, including those few derived from other parts of the world which have gained a firm foothold in our flora, propagating their kind spontaneously. Of course these grasses differ much in value: many are entirely worthless, others of more or less value, if compared with those of the highest merits on account of their richness in life-sustaining and blood or fat-producing qualities. Scientifically, it has never been demonstrated which, in that regard, are to be placed at the head of the list, as no analyses of any of them have been made. It is indeed a most meritorious work in which, at present, the Department of Agriculture, in Washington, is engaged in instituting a line of analytical researches at its laboratories to supply this greatly desired information. Samples of the grasses from this section, deemed the most important on account of their frequency, distribution, and habit, have been, by request, forwarded to the Department to be analyzed. In the following lines the grasses considered as more or less valuable are mentioned to attract the attention of those interested, which, by a mere mention of names in the catalogue, can not be achieved.

Hydrochloa Carolinensis, Bauv. A soft, tender, short grass, creeping on the muddy banks of the creeks in the pine woods, floating in patches in their more gently flowing waters. It is perennial, and vegetates all winter, when it is particularly sought for by cattle.

Alopecurus pratensis, L. and A., *geniculatus*, L., the meadow foxtails of Europe where they are esteemed as valuable meadow grasses, are sparsely naturalized with us.

Agrostis alba, B. Fiorine or white bent grass, naturalized from Europe, is frequent in low fields and cultivated grounds. It is perennial and the densely tufted stems surrounded by the long, narrow tender leaves, bear spreading panicles of pale flowers. It will stand our summers well and prove for this section what the red top is for the North.

Muehlenbergia Mexicana, Tr., and *M. diffusa*, are perennial, more or less decumbent grasses, with slender stems and short, narrow, soft leaves, growing in damp woods and thickets, and are much liked by cattle and horses.

Cynodon Dactylon., Per. Bermuda grass, perhaps introduced, widespread over the maritime regions, thriving in the arid barren driftsands on the seashore, covering them by its long creeping stems, whose deeply penetrating roots impart firmness to a soil

which else would ever remain devoid of vegetation. It is esteemed as one of the most valuable of our grasses either in the pasture or cured as hay. As there has been much written about its merits they need here no further mention.

Leptochloa mucronata, Kunth., annual, two to three feet high, with broad, somewhat hairy leaves; the small flowers are borne in numerous slender spikes almost horizontally attached to the main stem, forming an elongated raceme; abundant in cultivated grounds; a soft, good grass.

Eatonia obtusata and *mucronata*. Vernal, perennial, slender grasses, growing in small tufts in dry grounds, on roadsides, borders of woods, etc.

Arundinaria gigantea: Cane: The largest of our grasses, reaching the dimensions of a small tree; in some respects one of the most important of our truly native grasses. It covers along the low borders of our rivers large tracts, called cane-breaks, as well as the rich forest swamps bordering upon them in the low country, affording throughout all seasons of the year an abundance of highly nutritious food.

Arundinaria tecta: Smaller cane; reed; does not attain the dimensions of the last; ripens its farinaceous, large, early dropping seeds in February and March; after that, thriving new branches covered with a very rich foliage of the richest verdure; prefers the better soils not subject to inundation, and forms the esteemed range of the so-called hammock lands; fire destroys it rapidly.

Festuca unioides: Drooping fescue. A slender, perennial, growing in the more central districts, from where it was sent to me for determination by parties who speak highly of it.

Uniola latifolia: A fine perennial two to three feet, with long, flat leaves, bearing the flat spikelets on slender drooping stalks in a loose panicle; is frequent towards the centre of the State, growing in large tufts, and judging from its foliage a grass of good quality.

Bromus Schraderi: Only of late years found spreading in different parts of the State; annual; makes its appearance in February; grows in tufts, its numerous leafy stems growing from two to three feet high; ripens the seed in May; affords in the earlier months of spring a much relished nutritious food, as well as a good hay.

Holcus lanatus: Velvet grass: This of late has attracted some attention, fully merited, as it grows with great rapidity during the early spring season, and is ready for mowing in the beginning of

May; affords large crops of fine, sweet hay; fields with crops of this grass raised near Mobile, present a splendid, luxuriant appearance; is worth a place in the front of our pasture or hay grasses; has been absurdly called Mesquite grass and said to come from Texas; is a native of Europe and there regarded as a valuable perennial meadow grass.

Arrhenatherum avenaceum: Oat grass: A fine perennial, much of the aspect of oats, with a stem two to three feet in height, with broadly linear leaves. Samples received this season from Mississippi, taken from lots cut for hay, present the appearance of a thrifty, luxuriant, largely yielding hay grass, well adapted for our soils and climate.

Phalaris intermedia: An annual native, peculiar to the lower region of the South; its tall, somewhat stout stems, bear broad leaves and flowers in a dense cylindric terminal spike, two to four inches long, and from one-half to three-fourths of an inch thick, resembling the heads of timothy. It is asserted that stock of all kinds is very fond of it, either green, or cured as hay; is common along our seashore in gravelly soils intermixed with some vegetable mould.

Panicum (Digitaria) sanguinale: Crab grass: This annual, thoroughly naturalized from Europe, is too well known to need further description here, and its merits as one of the chief hay crops of the South, in regard to quality and quantity, are sufficiently appreciated by all interested, to be spoken of any further, here.

Panicum (Digitaria) filiformis: Is the native form of crab grass: Is common in the coast region of the Atlantic slope and the Gulf: Its stem is erect, bearing its florets in erect, slender spikes: Very common, but hard and dry, and not much relished by cattle.

The *Panics* proper, are represented in our flora by a great number of species, forming a large part of our gramineous vegetation: They are mostly perennials, growing in the most different soils, and some of the gregarious species covering large tracts of ground, are a prominent feature of our range: In the young and tender state, all afford, more or less, valuable nutriment: The larger species, with but few exceptions, soon get harsh and dry, and arrived at maturity, are mostly unpalatable; the genus (*Panicum*) is known by its nearly globose spikelets bearing one perfect floret: The more or less slender flower stalks are disposed in panicles, on the main stem: Seeds are all mealy and nutritious, and the smaller, more delicate species, are, on

that account, even when dry, not without value : Some of the most valuable grasses imported from the tropics of the Old World, and cultivated in the warmer zones of this continent, belong to this genus : One of our native species rivalling these in sweetness and nutritious qualities, in my opinion, is the

Panicum proliferum, a large succulent, annual grass, putting forth its numerous tender branches throughout the latter part of the summer ; it grows 3 to 4 feet or more in height, stands cutting well, and cattle and horses are very fond of it.

Panicum Grus Galli : Also an annual, 2 to 3 feet high, bearing its hispidly awned flowers, in dense one-sided panicles, composed of numerous crowded spikes ; is found growing luxuriantly, particularly in the low lands of the coast ; is greedily eaten by horses and cattle, and makes fine hay of good quality.

Andropogon Scoparius : Broomsedge : One of our most common grasses, covering old fields, fencerows, and extensively growing in the dry sandy soils of the pine woods : Much despised as this grass is as a troublesome, unsightly weed, it has its good qualities, which entitle it to a more charitable consideration : In the dry pine woods, it contributes while green and tender, a large share to the sustenance of the stock : From a statement in the Report of the Department of Agriculture, (1874), I perceive that in the great plains of the West, it is regarded as one of the very best of the forage resources of that great grazing country. East of the Mississippi, it has always been looked upon as worthless.

Of native forage plants belonging to other natural families, we possess a few valuable *Leguminosæ*, plants of the pea tribe, particularly of the genus *Desmodium*.

Desmodium acuminatum, and *D. nudiflorum*, common all over the States east of the Mississippi, and much esteemed as nutritious, milk-producing plants, are frequent in rich, shady woods through this State. Other species, peculiar to its southern section, are said to be valuable, and are even cultivated in Florida, but they are more or less hard and dry, the stiff stems but scantily clothed with leaves. The *Desmodiums* are known under the name of *Tick trifol*, or tick-seeds, from the flat-jointed hispid seedpots that attach themselves to the hair and fleece of animals and the clothing.

The *Lespedeza striata*, Japanese Clover, belongs to this family ; introduced from Eastern Asia, it has, during the last decade, overspread the Southern States from the Atlantic shores to the banks of the Mississippi. Cattle and horses are eating it. Of its value

as a nutritive food, I can not speak. The analysis to be soon expected from the National Department of Agriculture will soon decide upon its merits.

Several species of Vetches or tares, *Vicia*, deserve attention. The European tare, *Vicia sativa*, is almost naturalized in many parts of this State, thriving luxuriantly; its rich flowering vines reach three to four feet in height, early in April on the coast; much cultivated in Europe as a favorite green crop for milk cows; is entitled to more attention from our dairy men than it has received.

Along the seaboard of this State, the so-called *Mexican* clover, *Richardsonia scabra*, is found spreading extensively; it covers the sandy upland soils completely with its succulent prostrate leafy stems bearing the small white funnel-form flowers, in terminal heads, and whorls in the axils of the leaves. In regard to its nutritive value, it is scarcely inferior to clover; horses, cattle and sheep are fond of it, particularly of the hay. A detailed account, with an analysis of the plant by the Department, is found in the Report of 1874. As a green manure, it is of the greatest benefit to the farmer in the lower pine region.

Very valuable as affording rich, nutritious pasture ground, in the earliest parts of spring, is the *Spurge*, or *Spergula arvensis*, a low annual with prostrate diffuse, succulent, jointed stems, bearing whorls of small, narrow, linear leaves, and the small, greenish white flowers attached to slender stalks. This plant seeds abundantly in April; with the appearance of the warm seasons it dries up and disappears completely, re-appearing during the sunny days in the latter part of the winter, and not liable to be after that injured by frost; is held in high repute in the low countries of Western Europe by the dairy men, and the butter produced from the milk of cows feeding on this earliest of all pasture plants enjoys a particular reputation for its fine flavor as Spurge butter.

LIST OF GRASSES FOUND IN ALABAMA.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.*	DURATION.
1.	<i>Leersia oryzoides</i> Swartz.	False Rice.	Low, marshy banks.	Montgomery.	Perennial.....
2.	" <i>Virginica</i> , Willd.	"	"	Mobile.	"
3.	<i>Zizania aquatica</i> , L.	Wild Rice.	Deep marshes.	"	"
4.	" <i>miliacea</i> , Mx.	"	"	"	"
5.	<i>Hydrochloa Carolinensis</i> , Beauv.	Floating Grass.	Muddy banks and shallow streams.	Mobile.	Perennial.....
6.	<i>Alopecurus geniculatus</i> L.	Meadow fox tail.	Cultivated grounds.	"	"
7.	" <i>pratensis</i> , L.	"	"	"	"
8.	<i>Phleum Prutense</i> L.	Timothy.	" rare.	"	"
9.	<i>Sporobolus junceus</i> , Kth.	Wire grass.	Dry pine barrens.	"	"
10.	" <i>Indicus</i> , Br.	Smut grass.	Waste places.	"	"
11.	<i>Vilfa aspera</i> , Beauv.	"	Dry sterile soils.	"	"
12.	" <i>vaginiflora</i> , Tor.	"	"	"	"
13.	<i>Agrostis scabra</i> , Willd.	Rough bent grass.	Sandy soil.	"	"
14.	" <i>arachnoides</i> , Ell.	Spider bent grass.	Dry soil on the coast.	"	"
15.	" <i>Alba</i> , L.	Eng. or white bent.	Damp cultivated places.	"	"
16.	<i>Cinna arundinacea</i> , L.	Sweet reed.	Rich woods.	Montgomery.	"
17.	<i>Muhlenbergia</i> or <i>diffusa</i> , Sw.	Dropseed grass.	Low damp thickets.	Mobile.	"
18.	" <i>Mexicana</i> , Trin.	"	"	"	"
19.	" <i>capillaris</i> , Kth.	Seaside hair grass.	Sandy soil, coast.	"	"
20.	" <i>trichopodes</i> , Ch.	Bunch hair grass.	Dry pine woods.	"	"
21.	<i>Bacchelytrum aristatum</i> , B.	Feather grass.	Dry woods.	Montgomery.	"
22.	<i>Stipa avenacea</i> , L.	"	pastures.	"	"
23.	<i>Arisida lanata</i> , Poir.	Poverty grass.	Dry, sandy soils.	Mobile.	"
24.	" <i>purpurascens</i> , Poir.	Beard grass.	"	"	"
25.	" <i>virgata</i> , Trin.	"	"	"	"
26.	" <i>stricta</i> , Mx.	"	"	"	"
27.	" <i>spiciformis</i> , Ell.	"	Low, wet, pine barrens.	"	"
28.	<i>Spartina juncea</i> , Willd.	Marsh grass.	Brackish marshes, coast.	"	"
29.	" <i>glabra</i> , Muhl.	"	"	"	"
30.	" <i>polystachya</i> Willd.	"	"	"	"

*This heading is intended to designate the Counties in which the specimens were collected by the writer.
 (The names, initials, and abbreviations of names immediately to the right of the Botanical names, indicate the authors of the plant names.)

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
31.	<i>Gymnopogon racemosus</i> , Bv...		Dry pine woods	Mobile	Perennial.....
32.	<i>Eustachys petraea</i> , D.....	Seaside finger grass...	Damp soil, near the coast.....	"	"
33.	<i>Cynodon Dactylon</i> , Pers.....	Bermuda grass.....	Near the coast.....	"	"
34.	<i>Cenium Americanum</i> , Spr...	Toothache grass.....	Low pine barrens.....	"	"
35.	<i>Dactyloctenium Aegyptiacum</i>	Crowfoot grass.....	Cultivated ground.....	Montgomery..	"
36.	<i>Eleusine Indica</i> , Gær.....	Yard grass	"	"	"
37.	<i>Leptochloa mucronata</i> , K....		Fields and gardens.....	Mobile ..	"
38.	" <i>polystachya</i> , K....		Branches and swamps.....	"	"
39.	<i>Triuspsis seeleroides</i> , Torr...		Dry soils.....	"	"
40.	" <i>ambigua</i> , Chap.....		Damp soils.....	"	"
41.	<i>Triplasis Americana</i> , Beauv...		Dry sandy, pine woods.....	"	"
42.	" <i>purpurea</i> , Gr.....		Drifting sand, sea coast.....	"	"
43.	<i>Eatonia obtusata</i>	Sand grass.....	Dry and cultivated soil.....	"	"
44.	" <i>Pennsylvanica</i> , Gr....		Dry pine woods.....	"	"
45.	<i>Melica mutica</i> , W.....	Melic grass.....	Shady wood.....	"	"
46.	<i>Glyceria nervata</i> , Trin.....	Manna Grass.....	Low, grassy woods.....	Montgomery..	"
47.	<i>Arundinaria gigantea</i> , Chap...	Cane.....	Low, marshy, rich river b'k.....	Mobile.....	"
48.	" <i>tecta</i> , Muhl	Cane.....	Low, rich woods.....	"	"
49.	<i>Brizopyrum spicatum</i> , Hook...		Salt marshes, seashore.....	"	"
50.	<i>Poa annua</i> , L.....	Low spear grass.....	Cultivated grounds.....	"	Annual.....
51.	" <i>compressa</i> , L.....		Sterile clay soils.....	Montgomery...	Perennial.....
52.	" <i>pratensis</i> , L.....	Blue grass.....	Rich calcareous soils.....	Upper county	"
53.	" <i>flexuosa</i> , Muhl.....		Rich woods.....	Montgomery...	"
54.	<i>Eragrostis reptans</i> , Nees.....		Low, sandy river banks.....	Tallahpoosa...	"
55.	" <i>megastachya</i> , Gr...		Cultivated grounds.....	Mobile.....	Annual.....
56.	" <i>ciliaris</i> , L.....		Waste places.....	"	"
57.	" <i>Purshii</i> , Schrad.....		Sandy, dry soil.....	"	"
58.	" <i>conferta</i> , Trin.....		Moist banks and fields.....	"	"
59.	" <i>tenuis</i> , Gr.....		Dry woods and banks.....	"	Perennial.....
60.	" <i>nitida</i> , Chap.....		Sandy seashore.....	"	"
61.	" <i>pectinacea</i> , Gr.....		Dry soil, common.....	"	"
62.	<i>Festuca Myurus</i> , L.....	Small Fescue grass.....	Dry soil, common	Montgomery...	Annual.....
					Worthless.
					"
					Worthless.
					"
					Worthless.
					"
					Some value.
					Valueless.
					Some value.
					Valuable.
					Highly val'ble
					"
					Worthless.
					Some value.
					No value.
					Valuable.
					No value.
					Worthless.
					"
					"
					Some value.
					"
					"
					Perennial.....
					"
					"
					Valuable.
					Worthless.

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

NO.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
63.	<i>Festuca parviflora</i> , Ell.	Small Fescue grass.	Dry soil, common	Mobile	Annual..... Worthless.
64.	" <i>tenella</i> , Willd.	"	Dry soil, common	"	"
65.	" <i>unioloides</i> , Willd.	"	Woods	Montgomery	Valuable.
66.	<i>Bromus ciliatus</i> , L.	"	Moist, shaded banks.	Central Ala.	"
67.	<i>Bromus Schraderi</i> , Lk.	"	Cultivated ground.	Mobile	"
68.	<i>Uniola latifolia</i> , Mx.	"	Shaded woods.	Montgomery	Perennial
69.	" <i>gracilis</i> , Rich.	"	Low banks and woods.	Mobile	"
70.	" <i>paniculata</i> , L.	Sea oats.	Drifting sands, seashore.	"	Worthless.
71.	" <i>nitida</i>	"	Low, shaded banks.	"	"
72.	<i>Phragmites communis</i> , Trin.	Reed	Marshes.	"	"
73.	<i>Elymus Virginicus</i> , L.	Wild rye.	Low rich banks.	"	"
74.	<i>Gymnostichum Hystrix</i>	Lyme grass.	Woods and fields.	"	"
75.	<i>Hordeum</i>	Wild barley.	Waste places	"	Annual.
76.	<i>Danthonia sericea</i> , Nutt.	"	Dry pine woods.	"	"
77.	" <i>spicata</i> , Beauv.	"	Barren soil	North Ala.	"
78.	<i>Arrhenatherum avennaceum</i> , B.	Tall oatgrass.	Cultivated ground	Mobile	Valuable.
79.	<i>Avena fatua</i> , L.	Sand oats, wild oats.	Waste places.	"	"
80.	<i>Phalaris intermedia</i> , Bosc.	Wild canary grass.	Damp places.	"	"
81.	<i>Aira caryophyllea</i> , L.	"	Grassy banks.	"	Perennial
82.	<i>Holcus latius</i> , L.	"	Cultivated ground	Montgomery	Worthless.
83.	<i>Paspalum fluitans</i> , Kth.	"	Ditches and ponds.	Mobile	Valuable.
84.	" <i>distichum</i> , L.	"	Borders of swamps.	"	"
85.	" <i>præcox</i> , Walt.	"	Sandy soil.	"	"
86.	" <i>laeve</i> , Mx.	"	"	"	"
87.	" <i>racemulosum</i> , Nutt.	"	Dry soil	"	"
88.	" <i>Floridanum</i> , Ma.	"	Dry, sandy soil, common.	"	"
89.	" <i>clatifolium</i> , Mx.	"	Cultivated fields near coast.	"	"
90.	" <i>undulatum</i>	"	"	"	Annual.
91.	<i>Panicum sanguinale</i> , Lin.	Hoary crab grass.	Damp pasturages, roadsides,	Mobile	Valuable.
92.	" <i>villosum</i>	"	common	"	Highly val'ble
93.	" <i>Filiforme</i> , L.	Slender crab grass.	Sandy dry soils.	"	Annual.
					Some value,
					Little value.

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

NO.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
94.	<i>Panicum gibbon, Ell.</i>	Spiked panic grass.	Low, wet places.	Mobile.	Perennial.
95.	" <i>hians, Ell.</i>	"	"	"	"
96.	" <i>anceps, Lin.</i>	"	Dry soil.	"	Valuable. " " "
97.	" <i>virgatum, L.</i>	Tall panic, switch cane.	Swamps.	"	"
98.	" <i>verrucosum, L.</i>	"	Low, damp woods.	"	Good while young.
99.	" <i>viscidum, Ell.</i>	"	On marshes and low banks.	"	Some value.
100.	" <i>capillare, L.</i>	"	Dry fields.	"	"
101.	" <i>amarum, Ell.</i>	"	Sandy seashore.	Montgomery.	Worthless.
102.	" <i>scoparium, L.</i>	"	Margin of woods.	Mobile.	"
103.	" <i>microcarpon, M.</i>	"	Dry soil, common.	"	Little value.
104.	" <i>dichotomum</i>	"	Low ground, common.	"	"
105.	" <i>depauperatum, Ml.</i>	"	Low, sandy fields.	"	"
106.	" <i>ignotum, Kth.</i>	"	Dry pine woods.	"	"
107.	" <i>rufum, Kth.</i>	"	Damp pine woods.	"	"
108.	" <i>Walteri, Ell.</i>	"	Damp, shaded soils.	"	"
109.	" <i>Crus Galli, L.</i>	"	Damp, shaded soil, borders of branches and swamps, very luxuriant.	Annual.	Some value.
110.	<i>Setaria glauca, Beauv.</i>	"	very luxuriant.	Mobile.	Very valuable
111.	" <i>glauca, var. laevigata, Chap.</i>	"	Cultivated ground.	"	Some value.
112.	" <i>Italica, Kth.</i>	Millet	Brackish swamps.	Mobile.	Annual.
113.	" <i>Germanica.</i>	"	Deep river marshes and cultivated soil.	Mobile.	Annual.
114.	<i>Cenchrus echinatus.</i>	German millet.	Introduced.	"	Valuable.
115.	" <i>tribuloides L.</i>	Burr grass.	Fields and waste places.	"	"
116.	<i>Stenotaphrum Americanum, S</i>	"	Drifting sand, coast.	"	Worthless.
117.	<i>Rottboellia rugosa, Nutt.</i>	"	Damp, sandy coast.	"	"
118.	" <i>corrugata, Bald.</i>	"	Pine, barren swamps.	"	Perennial
119.	<i>Tripsacum dactyloides, L.</i>	Gama grass.	"	"	Little value.
			Rich soil.	"	Valuable.

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

NO.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
120.	<i>Andropogon tener</i> , (Kth.)		Dry, close soils.	Mobile.	Perennial
121.	"	Scopaartus, Mx.	Broom sedge.	"	"
122.	"	Elliotii.	Broom sedge.	Common dry places.	Perennial
123.	"	Virginicus	"	"	"
124.	"	macrourus, Mx.	Brook grass	"	"
125.	"	furcatus, Muhl.	Tall forked broom-sedge	"	"
126.	"	melanocarpus, E.	Dry woods.	Mobile.	Perennial
127.	<i>Erianthus alopecuroides</i> , Ell.	Tall wool grass.	Damp, shaded woods.	Baldwin	"
128.	"	confertus	Ponds and borders swamps.	Mobile.	"
129.	<i>Sorghum avenaceum</i> , Ch.	Indian grass.	"	"	Worthless.
130.	"	nutans, Gr.	Dry sandy soil.	"	"
			Pine woods.	"	Little value.
				"	Valued West.

NOTE.—There is no doubt that in the northern part of the State other species of particularly Northern forms are to be found, which did not come to the notice of the writer.

APPENDIX

131.	<i>Aristida gracilis</i> Ell.	Poverty grass.	Sandy places, common.	Mobile.	Perennial.	Worthless.
132.	<i>Panicum proliferum</i> , Lam.	Sprouting panic-grass	Low rich soils	"	"	Very valuable.
133.	"	Curtisii, Chap.	Damp grassy pine barrens—rare	"	"	Some value.
134.	"	hirtellum, L.	Creeping Beard grass	"	"	Little value.
135.	"	nov. spec. ?	Running panic-grass.	"	"	Some value.
136.	<i>Andropogon tetrastachyus</i> , Ell.		Dry drifting sand—seashore.	"	"	Worthless.
137.	<i>Erianthus strictus</i> , Bald.		Low pine barrens—very rare	"	"	Of no value.

Note.—No. 108. *Panicum Walteri*, Ell. = *Panicum colonum*, L. Introduced from the tropics.

